FY2003 TIME Center Report and Statement of Work
(1 Oct 02 – 30 Sept 03)

Background. The TIME Center supports NTHMP goals in all three major components – Mapping, Mitigation and Warning. Merged bathymetry/topography grids were developed or are being developed for areas of Alaska, California and Washington. Data recovery efforts are underway to retrieve the model ouput for the final inundation simulations performed by OGI and provided to DOGAMI for the development of the Oregon and Washington inundation and evacuation maps. Workshops were held at PMEL and in Hawaii to develop plans for the implementation of tsunami inundation forecast guidance, and TIME scientists participated in a meeting of the Hawaii Tsunami Technical Review Committee.

A state-by-state narrative on these activities is given below, and Table 1 summarizes the status and cost of each item.

Work Statements

Alaska. The TIME Center has developed three elevation grids, updated two others for the Seward mapping project. These grids have been delivered to the Alaska Tsunami Mapping Team (ATMT). TIME will provide a grid development report by mid-June 2003.

TIME has also assisted ATMT in separate gridding efforts by providing quality control analyses, development guidelines, and data source contacts. TIME will provide the ATMT with a grid development report for this project once ATMT verifies grid completion.

TIME has been working with the National Ocean Service to accelerate bathymetric multibeam and LIDAR data collection in areas surrounding at-risk communities. NOS will be conducting hydrographic surveys around Sitka and Sand Point within the next few years.

TIME has been funded by the TWEAK project to help accelerate mapping efforts in Alaska, primarily through grid development. As part of this work TIME will develop grids for three more communities in FY2003. Data assessment and vertical control reports have been provided to ATMT for Sitka and Yakutat. TIME plans to begin grid development for Sitka and Yakutat in the summer. TIME plans to develop grids for Whittier in early fall.

California. The TIME Center is developing 10-12 central California grids for delivery to the University of Southern California this summer (see Figure 2). TIME will then develop high-resolution grids for San Francisco Bay in the fall.

Hawaii. TIME has assisted Hawaii in the development of their mapping, mitigation, and warning efforts. TIME staff participated in the Hawaii Tsunami Technical Review Committee meeting on 14 March 2003 in Honolulu. TIME staff have been coordinating with University of Hawaii researchers on mapping and warning guidance issues.

Oregon. The TIME Center is currently working with Ed Myers (NOAA), OGI, WA and OR to recover and archive computational grids and final model output from prior mapping efforts.

In addition, TIME has provided OGI with source scenario data from the Newport mapping project.

Washington. TIME is currently developing a system of three grids for the Tacoma area. TIME is also nearing completion of the modeling effort for the communities of Bellingham, Anacortes, and northwestern Whidbey Island. Reports on the 2002 Puget Sound Tsunami Sources Workshop and the Seattle inundation modeling effort are in press. A report has been published on a coarse-grid modeling of the 1100 bp tsunami in Puget Sound. A methodology was developed for using tidal model output to resolve datum differences between disparate bathymetric and topographic data sets.

Mofjeld, H.O., A.J. Venturato, V.V. Titov, F.I. González, and J.C. Newman (2002): Tidal datum distributions in Puget Sound, Washington, based on a tidal model. NOAA Tech. Memo. OAR PMEL-122, 35 pp.

González, F., B. Sherrod, B. Atwater, A. Frankel, S. Palmer, M. Holmes, B. Karlin, B. Jaffe, V. Titov, H. Mofjeld, and A. Venturato (2002): 2002 Puget Sound Tsunami Sources Workshop Report. A contribution to the Inundation Mapping Project of the U.S. National Tsunami Hazard Mitigation Program, NOAA OAR Special Report [In press].

Titov, V.V., F.I. González, H.O. Mofjeld, and A.J. Venturato (2003): Mapping inundation by the Seattle Fault tsunami. NOAA Tech. Memo. OAR PMEL [In press].

Koshimura, S., H.O. H.O. Mofjeld, F.I. González, and A.L. Moore (2002): Modeling the 1100 bp paleotsunami in Puget Sound, Washington 10.1029/2002GL015170, 9-1 – 9-4. (Dr. Koshimura was funded by the Japanese government for his part of the work)

NTHMP. In this section, we report on work that advanced the goals of the national program as a whole.

Mapping. A report has been completed and is in review that makes a contribution to a serious and long-standing problem in mapping technology. It provides a systematic method for resolving datum differences between disparate bathymetric and topographic data sets.

Mofjeld, H.O., A.J. Venturato, F.I. González, V.V. Titov, and J.C. Newman (2002): The harmonic constant datum method: Options for overcoming datum discontinuities at mixed/diurnal tidal transitions. J. Atmos. Oceanic. Tech. [In review].

Warning

The TIME Center organized and conducted an R&D workshop on far-field tsunami forecast guidance on 21 January 2003 in Seattle. The workshop summary report has been completed and is currently in review.

González, Frank, David Burwell, Kwok Fai Cheung, Charles McCreery, Harold Mofjeld, Vasily Titov and Paul Whitmore (2003): Far-field Tsunami Forecast Guidance: A Report on the 21 January 2003 Workshop, NOAA Technical Report, [In review].

TIME conducted a follow-up Emergency Management workshop on far-field tsunami forecast guidance on 13 March 2003 in Honolulu.

TIME is working with the National Data Buoy Center (NDBC) on development of their DART web site.

A report has been completed and is in review on the generation of seiches by seismic waves.

Mofjeld, H.O., F.I. González, V.V. Titov, and J.C. Newman (2003): The generation of seismic seiches and their dependence on seismic wave dispersion and imperfect boundary reflection. J. Geophys. Res. [In review].

Budget.

Summaries of the state-by-state and NTHMP activities, their status and estimated cost are provided in Table 1. Costs are primarily labor and computing expenses (details are available).

Table 1. TIME Center activities in support of State Mapping and Mitigation goals and NTHMP Warning goals.

Component	Activity	Status	Cost
Alaska • **Mapping**	• Develop and deliver Seward grid. • Assist in additional grid efforts	• Completed • Underway	$55.6 K
California • **Mapping**	• Develop North and Central coast grids. • Develop San Francisco grid	• Underway • Planned	$50.2 K
Hawaii • **Mapping** • **Mitigation** • **Warning**	• Consultations regarding Hawaii Mapping, Mitigation, Warning • Participate in Hawaii Tsunami Technical Review Committee meeting (14 Mar 03, Honolulu).	• Ongoing • Completed	$22.5 K
Oregon • **Mapping**	• Recover and archive model output. • Provide data as needed	• Underway • Continuing	$0.0 K
Washington • **Mapping** • **Mitigation**	• Develop Tacoma grids. • Publish Final Report on Seattle inundation mapping. • Report on Puget Sound Tsunami Sources Workshop (10 Jun 02). • Participate in outreach/education efforts	• Underway • In Review • In Press • Continuing	$70.2 K
NTHMP • **Warning**	• Conduct R&D workshop on far-field tsunami forecast guidance (21 Jan 03, TIME Center, Seattle). • Conduct follow-on EM workshop on far-field tsunami forecast guidance (13 March 2003, Honolulu). • Publish 21 Jan 03 Workshop Report • SIFT (Short-term Inundation Forecasting for Tsunamis) work • Facilitate DART transfer to NDBC	• Completed. Report in review • Completed • In Review • Continuing • Continuing	$ 101.4 K
Total Cost			$300.0 K